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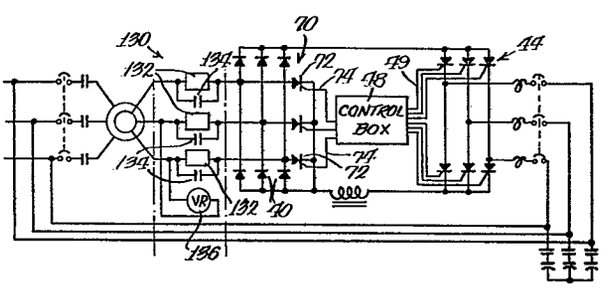
(54) Automatic fault protection system for power recovery control.

(57) An adjustable speed pumping system includes a plurality of pumps respectively driven by variable speed A.C. motors each having a power recovery circuit. Each power recovery circuit includes a series connected rectifier bridge, an inductive reactor and an inverter coupled to the secondary winding of the motor which has an A.C. source connected to the primary winding. A fault clearing mechanism is included in each circuit and includes solid state switches in the bridge actuated by a current level sensor coupled to the inverter output. The power recovery circuit also includes current foldback circuitry and secondary gating circuitry coupled to thyristors in the inverter. The power recovery circuits can be connected in parallel with a single motor and the system includes circuitry for sensing the highest amplitude current in the parallel circuits and controlling all circuits with this current. Each pump has a valve associated with the outlet and circuitry associated therewith to operate the pump at a low forward speed upon receipt of a stop command until the valve is closed to prevent significant reverse flow through the pump.



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EUROPEAN SEARCH REPORT

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Application number

EP 81 30 1978.3

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	BULL. SEV/VSE, Vol. 65, No. 2, January 1974, Zürich H. PISECKER, "Schaltfeste untersynchrone Stromrichterkaskade" page 85 to 96 * page 94, paragraph 44, page 95, line 8; fig. 5, 11a, b *	1-4, 10,11, 14,20, 24,28, 30,31, 33,35, 36	H 02 H 7/08 H 02 H 3/08 H 02 H 3/20 H 02 M 1/18 H 02 P 7/62
X	US - A - 3 536 984 (G.M. ROSENBERRY) * column 2, line 3 to 24; column 4, line 25 to column 5, line 43; fig. *	1,4,9, 20,23, 24,33, 36,40	TECHNICAL FIELDS SEARCHED (Int.Cl. 3)
A	US - A - 3 683 251 (J. PISECKER) * column 7, line 8 to column 8, line 46 *		H 02 H 3/08 H 02 H 3/20 H 02 H 7/08 H 02 M 1/18 H 02 P 7/62

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
Y: particularly relevant if combined with another document of the same category
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: earlier patent document, but published on, or after the filing date
D: document cited in the application
L: document cited for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Berlin	25-03-1982	LEMMERICH

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